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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 07-102198- -00001-0000

Fecha: 2008-06-10 16:23:05 Dep. 2020 NUECREACION
Tra. 11 PATENTE IYII Eve: 378 FASE NACIONAL
Act. 538 PETICION Folios: 2

3611
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Señora Jefe de la
DIVISION DE NUEVAS CREACIONES
Superintendencia de Industria y Comercio
E. S. D.

Trámite : 011

Evento : 378

Actuación : 538

Referencia : Expediente No. 07.102.198
Asunto : Solicitud de patente para: **CALZONCILLOS DE HIGIENE PARA USO ÚNICO**
Solicitante : **SCA HYGIENE PRODUCTS AB**
Publicada en : Gaceta No. 587 del 18 de enero de 2008
Fecha solicitud: 1 de octubre de 2007

1. Yo, Emilio FERRERO, identificado como aparece al pie de mi firma, actuando como apoderado en el asunto de la referencia, atentamente solicito se efectúe el examen de patentabilidad de la solicitud en referencia presentada de acuerdo con el Capítulo I del PCT y según lo establecido en el artículo 44 de la Decisión 486 de la Comisión de la Comunidad Andina. Para tal efecto presento junto con este escrito el recibo por valor de \$420.000.00, que corresponde a la tasa fijada según lo dispuesto en la Resolución No. 44372 del 26 de diciembre de 2007.

2. Ruego atentamente a la Señora Jefe se sirva ordenar que se anexe este recibo para que se efectúe dicho examen y se continúe con el trámite de la solicitud.

Señora Jefe,

EMILIO FERRERO

T.P.A. No. 31.929

COLO-11256-841-128-7

JGG\JGG\ID-127801\WPC11256

No. M-2008-127801\JGG

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 08 - 46,033
FECHA : JUNIO 9 DE 2008

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CAVELIER ABOGADOS	CONSIGNACION	BANCO DE BOGOTA	062754387	2678328	09/06/2008	89,445,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	85 EXAMEN DE PATENTABILIDAD DE INVEN	420,000.00
		TOTAL :	\$ 420,000.00

SON: CUATROCIENTOS VEINTE MIL PESOS

RESPONSABLE :

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

Cdo 11256 - 841-128-7

DIVISIÓN DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 07-102198

EL EXTRACTO DE LA PRESENTE SOLICITUD DE **PATENTE DE INVENCION**

FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No **587** DE

FECHA **18 DE ENERO DE 2008** EL TÉRMINO HÁBIL SEÑALADO POR LA LEY

EXPIRA EL **16 DE ABRIL DE 2008**

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

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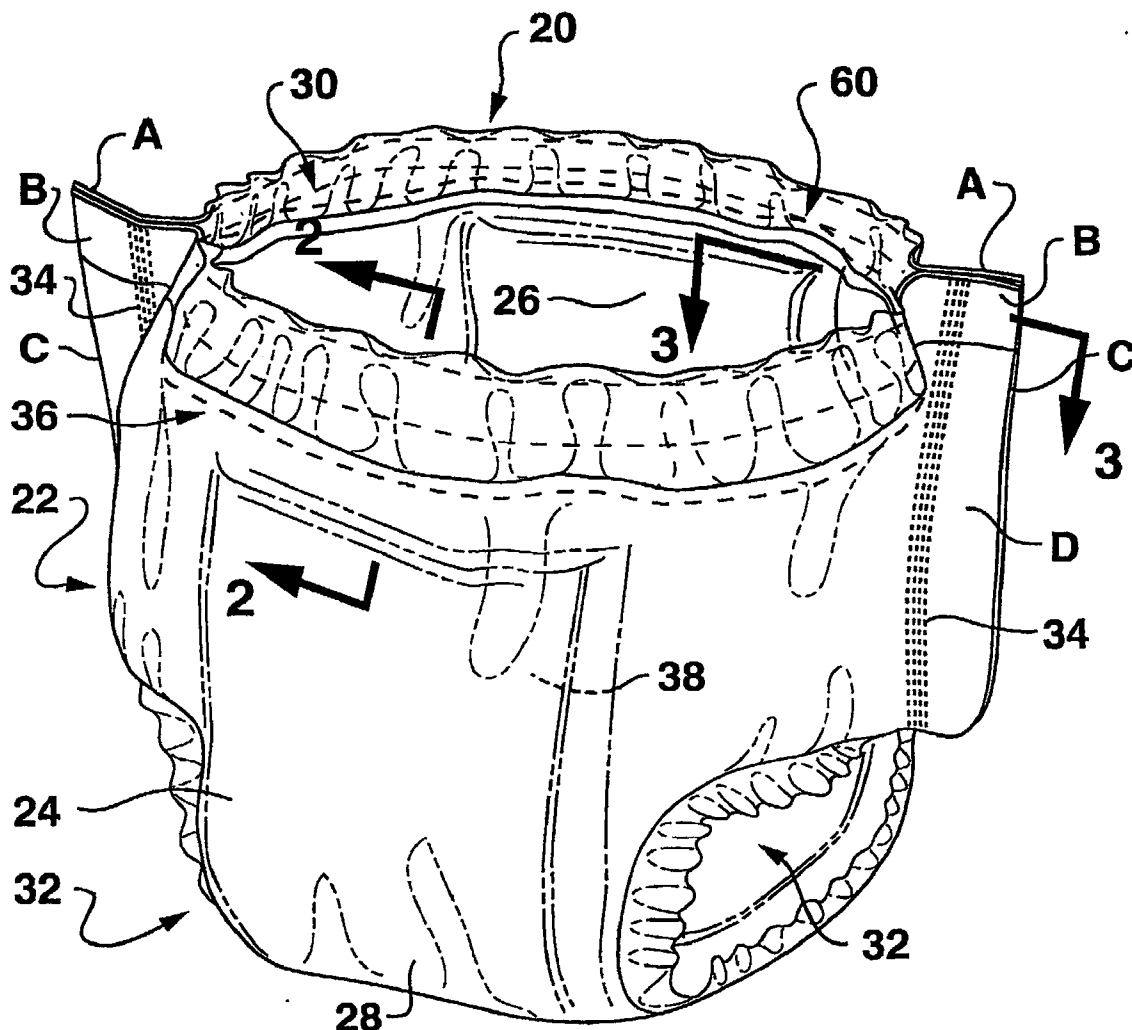


US 20040102757A1

(19) **United States**(12) **Patent Application Publication****Olson**(10) **Pub. No.: US 2004/0102757 A1**(43) **Pub. Date: May 27, 2004**(54) **DISPOSABLE ABSORBENT ARTICLE WITH AN ELASTIC WAISTBAND AND EASY TEAR SIDE SEAMS****Publication Classification**(51) **Int. Cl.⁷ A61F 13/15**(52) **U.S. Cl. 604/396**(75) **Inventor: Christopher P. Olson, Neenah, WI (US)**(57) **ABSTRACT**

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A disposable absorbent pant article, and method for making such article are provided. The article includes a chassis wherein facings of front and back panels are bonded together at side seams so as to define a waist opening and a pair of leg openings in the article. A waistband structure is attached to an edge portion of the front and back panels along a periphery of the waist opening and facings of the waistband structure are bonded with the front and back panel facings at the side seams. The waistband facings material is formed of a different material having a lower melting point as compared to the material of the front and back panel facings. In this manner, the waistband facings generally do not increase or decrease bond strength at the side seams.

(73) **Assignee: KIMBERLY-CLARK WORLDWIDE, INC.**(21) **Appl. No.: 10/301,878**(22) **Filed: Nov. 21, 2002**

DISPOSABLE ABSORBENT ARTICLE WITH AN ELASTIC WAISTBAND AND EASY TEAR SIDE SEAMS

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates generally to the field of disposable absorbent articles, for example children's training pants, and more particularly to a process for making such articles having an elastic waistband.

BACKGROUND

[0002] Current disposable absorbent training pants for children going through the potty training stage have proved to be a particularly desirable and useful product. This is especially true for the child, when he or she has outgrown, or believe they have outgrown, diapers. Diapers are perceived by children as being for babies, and most children do not like being identified with or as babies. Thus, these children do not want to wear diapers, and instead prefer to wear a training pant that looks like adult underwear.

[0003] From a product fit, comfort, and performance aspect, elastic waistbands are a desirable feature for many types of training pants. Various designs of such elastic waistbands have been used, such as a single wide elastic member or a plurality of narrow elastic members. The waistbands may fully or partially surround the waist opening. Generally, the elastic waistbands are incorporated by one of two methods. The first method incorporates the elastic waistbands when they are in an extended, tensioned state. The second method incorporates the elastic waistbands while they are in a relaxed, untensioned state. The latter method may require the use of a special elastic material, such as a heat-elasticizable material.

[0004] With certain types of training pants, a tearable side seam is provided between the front and back panels of the garment. These seams are disposed so as to run along the outer sides of the child's leg and provide a quick and relatively easy means for a parent, or the child, to remove the article, particularly when the pants have been soiled and it is impractical to remove the pants by pulling the article down and off of the child's legs. However, the desirability of providing a "substantial" waistband to such tearable seam pants with a thickness and feel that is noticeably different from the outer cover and side panels of the pants can be problematic, particularly at the seam zones. The waistbands tend to add significant "strength" to the seams and it may be difficult for certain consumers to tear through the waistbands when trying to remove the pants.

[0005] The present invention provides a method for producing tearable side seam training pants having a substantial elastic waistband that does not interfere with tearing the seams and removing the pants.

SUMMARY OF THE INVENTION

[0006] Objects and advantages of the invention will be set forth in part in the following description, or may be obvious from the description, or may be learned through practice of the invention.

[0007] The invention will be described and referenced herein as it relates to a process for making children's training pants. However, it should be understood that this is for

illustrative purposes only. The invention is not limited to training pants, but relates to any type of absorbent disposable garment or article incorporating tearable side seams. Such articles may include, for example, incontinence articles, pull-up diapers, feminine hygiene products, swim pants, and the like.

[0008] A method according to the invention is provided for making an absorbent pant article, such as children's training pants, having tearable side seams and an elastic waistband. The waistband provides all of the beneficial aspects of a full (completely encircling) substantial waistband but does not detract from the ability to remove the article from a wearer by tearing the article along side seams thereof.

[0009] Initially, an article or "chassis" is provided having a front panel, a back panel, a crotch panel extending between the front and back panels, and an absorbent structure carried in the chassis. The front panel and back panels have longitudinal edge portions and lateral sides. Conventional processes for defining these type of initial articles in an in-line absorbent article manufacturing process are well known in the art. An elastic waistband structure is attached, for example by thermal bonding or with an adhesive, to longitudinally opposed waist edges of the front panel and back panel. A pant structure is then defined by joining together the sides of the front panel and the back panel at side seams to form a pair of leg openings and a waist opening.

[0010] In one embodiment, the facing portions of the front panel material and back panel material joined at the side seams are made of a first material (or layers of different materials) having a first melting point. Facing portions of the material (or layers of different materials) of the waistband structure joined at the side seams are made of a second material having a second lower melting point as compared to that of the front and back panel facing portions.

[0011] The step of joining the front and back panels may include bonding the panels along the side seams at a temperature and/or pressure selected so as to achieve a desired bond strength between the facing materials of the front and back panels having the first higher melting point and also at a temperature and/or pressure high enough to essentially thermally degrade the materials of the waistband facings having the second lower melting point. The waistband materials are degraded to such an extent that such materials do not form any sort of appreciable seam that requires additional force to tear above that required to tear the side seams of the front and back panels. In other words, the waistband materials do not add to or decrease from the strength of the side seam. The side seams thus may, if desired, have a generally uniform tear strength from the waist opening, through the waistband, and to the leg openings.

[0012] It should be appreciated that the method and articles according to the invention are not limited to any particular material or combination of materials, so long as the waistband materials can be thermally degraded while maintaining the strength and integrity of the side seams between the front and back panels. Also, it is to be understood that the style, configuration, or features of the absorbent article are not limiting characteristics of the invention. The invention has utility and usefulness in any application of disposable absorbent article wherein a waistband is a desired feature.

[0013] The invention will be described in greater detail below through reference to embodiments illustrated in the figures.

BRIEF DESCRIPTION OF THE FIGURES

[0014] FIG. 1 is a perspective view of a child's training pant incorporating principles of the present invention.

[0015] FIG. 2 is a cross-sectional view of the training pant of FIG. 1 taken along the lines indicated in FIG. 1.

[0016] FIG. 3 is a cross-sectional view of the training pant of FIG. 1 taken along the lines indicated in FIG. 1.

[0017] FIG. 4 is a schematic illustration of a method for making an elastic waistband for incorporation with an absorbent article according to the invention.

[0018] FIG. 5 is a schematic illustration of a method for making an absorbent article according to the invention.

[0019] FIGS. 6, 7, and 8 are illustrations relating to a test procedure described herein.

DETAILED DESCRIPTION

[0020] The invention will now be described in detail with reference to particular embodiments thereof. The embodiments are provided by way of explanation of the invention, and not meant as a limitation of the invention. For example, features described or illustrated as part of one embodiment may be used with another embodiment to yield still a further embodiment. It is intended that the present invention include these and other modifications and variations as come within the scope and spirit of the invention.

[0021] The present invention provides an improved method for making absorbent articles, such as a child's training pant, having an elastic waistband wherein the waistband does not detract from the ability to remove the article from the wearer by tearing or separating the article along side seams. Principles of the invention will be described by reference to a child's training pant. However, as mentioned, it should be understood that the invention is not limited to training pants, but relates to any type of absorbent disposable garment or article incorporating tearable side seams. Such articles may include, for example, incontinence articles, pull-up diapers, and the like.

[0022] With reference to FIGS. 1 and 2, a disposable child's absorbent training pant 20 is illustrated. The pant 20 includes a chassis 22 having a front panel 24, a back panel 26, and a crotch panel 28 extending between the front and back panels. A waist opening 30 and a pair of leg openings 32 are formed by selectively joining the front panel 24 and back panel 26 at side seams 34. The side seams 34 extend between the waist opening 30 and respective leg openings 32. A waist border 36 peripherally surrounds the waist opening 30, and is formed upon joining the front panel 24 and the back panel 26 at seams 34. The side seams 34 will be discussed in greater detail below.

[0023] Still referring to FIGS. 1 and 2, the pant chassis 22 includes an absorbent structure 38 disposed in the crotch panel 28 and extending into the front panel 24 and back panel 26. In general, the absorbent structure 38 has a length dimension that is greater than the width dimension. As illustrated, the absorbent structure 38 may extend generally

from the front panel waist border to the back panel waist border. The absorbent structure may have any suitable shape and configuration, as recognized in the art. It should be appreciated that the configuration of the absorbent structure 38 is not a particularly distinguishing feature of the invention.

[0024] The chassis 22 further includes an outer cover layer 46 and a liner 48. The absorbent structure 38 is sandwiched between the outer cover layer 46 and liner 48. The liner 48 is desirably a single layer of liquid permeable material, but may also include other layers of material. The outer cover layer 46 is desirably a two-layer material that includes an outer layer 50, which may be made of a non-woven liquid permeable material, and an inner layer 52, which may be made of a liquid impermeable material. The outer layer 50 and inner layer 52 may be joined together in any suitable manner, such as by an adhesive 54. The adhesive 54 is illustrated in the figures as a generally continuous layer and is exaggerated for sake of illustration. It should be appreciated that the adhesive 54 may be deposited in any suitable pattern for providing adequate adhesion of the materials. The liner 48 is desirably joined to the outer cover layer 46 by an adhesive 56, thereby sandwiching the absorbent structure 38 therebetween. Again, the adhesive 56 is illustrated as a continuous layer and is exaggerated in the figure for sake of illustration.

[0025] Referring to FIG. 2 in particular, the waist border 36 desirably includes an extension of one of the layers of the chassis 22. For example, the waist border 36 may be a multi-layer structure comprising the outer cover layer 46 and liner 48. For example, this extension may be an extension of the outer layer 50 of the cover layer 46, as illustrated in FIG. 2. This extension forms a peripheral edge portion 58 that surrounds the waist opening 30.

[0026] It should be appreciated that the description of the training pant 20 provided herein is for illustrative purposes only, and is not meant to limit the structure of a training pant 20 encompassed by the invention. The training pant 20 may have any one of a number of suitable designs or constructions. Examples of representative training pants are disclosed, for example, in U.S. Pat. No. 4,940,464, and U.S. Pat. No. 4,641,381, the disclosures of which are incorporated herein by reference for all purposes.

[0027] Continuing to refer to FIGS. 1 and 2, a separate elastic waistband system 60 is associated with the chassis 22 about the waist opening 30. The elastic waistband system 60 includes an elongate sleeve member 62 defining an elongate passage 64 therethrough. An elongate elastic member 66 is disposed in the passage 64. The sleeve member 62 may be formed from one layer of material, such as a non-woven liquid permeable material, by folding the material into a C-shaped configuration comprising an outer surface 68 and an inner surface 70, as particularly shown in FIG. 2. The outer surface 68 and inner surface 70 can be joined in any suitable manner, such as by an adhesive. The adhesive joins the outer and inner surfaces 68, 70 and the elongate elastic member 66 is substantially freely moveable within the elongate passage 64.

[0028] The elastic waistband system 60 may be joined to one of the layers comprising the chassis 22, such as the outer layer 50, in any number of ways. In the illustrated embodiment, the elongate sleeve member 62 is joined to the

or projection beyond the SBL (see test FIG. 8). Composite samples were prepared using the following materials and methods.

[0101] Low melt point configurations:

[0102] Sample 1: A single layer of 0.6 mil (15.2 microns) polyethylene film with five strands of Lycra® elastic, available from E. I. DuPont de Nemours and Company, Wilmington, Del. U.S.A., attached using double sided adhesive such as Adhesive Transfer Tape 9509 available from Minnesota Mining and Manufacturing Company, St. Paul, Minn., U.S.A.

[0103] Sample 2: Four layers of 0.6 mil polyethylene film with five strands of Lycra® elastic, assembled as described in Sample 1.

[0104] High melt point configurations:

[0105] Samples 3 and 7: A laminate of 0.4 ounce per square yard (osy) (13.6 gram per square meter (gsm)) polypropylene spunbond (SB) with 23.5 gsm KRATON® elastomer available from Shell Chemical Company; the laminate being formed of two layers of spunbond in the configuration SB/KRATON/SB; and five strands of Lycra elastic adhered to the laminate using a construction adhesive such as H2525A, available from Findley Adhesives, Inc., of Wauwatosa, Wis., U.S.A.

[0106] Sample 4: A SB/Lycra/SB laminate formed using the spunbond described above, five strands of Lycra, and construction adhesive described above.

[0107] Sample 5: A film/Lycra/SB laminate formed using the polyethylene film and spunbond described above, and five strands of Lycra with the construction adhesive described above; the SB side of the laminate was placed against the SBL material when the composite sample was formed.

[0108] Sample 6: The same laminate as in Sample 5, but the film side of the laminate was placed against the SBL material when the composite sample was formed.

[0109] Bonding:

[0110] Samples 1-6 were bonded to SBL side panel material to form composite samples using an ultrasonic bonder 920 iw available from Branson Ultrasonics Corp. of Danbury, Conn., U.S.A. Bonder settings were as follows:

Air pressure	60-70 psi (pounds per square inch)
Weld time	0.15 sec
Hold time	0.10 sec
AB time	0.25 sec
AB delay	0 sec

[0111] Composite samples were constructed to have two pieces of SBL material as inner layers, and two pieces of waist band material as outer layers (FIG. 8; Lycra strands shown for reference only). Pieces were aligned as shown and attached using double sided adhesive as described above (although adhesive is optional). Composite samples were bonded as shown and trimmed to 1 inch bonded length if necessary prior to testing.

[0112] Sample 7 was bonded using an in-line rotary ultrasonic bonder such as is used to form side panel bonds on HUGGIES® PULL-UPS® Disposable Training Pants.

[0113] The bond pattern used for all samples was comprised of four rows of pins, each pin being 0.036 inches (0.91 mm) in diameter. The outer three rows of pins (next to the edge of the material) has a pin-to-pin spacing (center to center) of 0.062 inches (1.57 mm), while the innermost row had a spacing of 0.125 inches (3.17 mm). The rows were spaced 0.052 inches (1.32 mm) apart, and offset successively 0.016 inches (0.41 mm) from one row to the next. Other suitable bond patterns that provide adequate bond strength may be used.

[0114] The strength of the seams was then tested at the waistband section of the seams to determine the breaking strength of the waistband side seam bond when a load is applied at a constant rate in a direction perpendicular to the direction of the seam, the "strength" being the maximum load (in kilograms) achieved before the seam ruptures. The results were compared to the strength of the same type of seams on side panels without a waistband. The results are provided summarized in the table below:

TABLE

Samples	Average Bond Strength (kg)	Standard Deviation	Coefficient of Variability
Control (no waistband)	2.3	0.43	19%
1	2.0	0.36	18%
2	2.1	0.13	6%
3	3.5	0.78	23%
4	4.6	0.52	11%
5	3.2	0.24	8%
6	3.0	0.68	22%
7	1.0	0.84	82%

[0115] The seam strength of the side panels without a waistband was measured at 2.3 kg. The seam strengths for the one-inch waistband samples with low melt point waistband facings (samples 1 and 2) were 2.0 kg and 2.1 kg, respectively. Thus, it can be seen that the low melt point waistband structures did not add to the bond strength of the underlying seam. The high melt point waistband structures (samples 3 through 6) significantly added to the bond strength at the waistband sections of the seams.

[0116] It should be appreciated that the seam strength was measured just at the one-inch wide waistband structure, and not along the entire side seam. The principle here being that, for the higher melt point samples, the additional layers of waistband material at the same or a higher melt point as compared to the side panels will require more bonder energy than that required to bond just the side panels alone. Thus, if the bonder energy is optimized for the waistband section, the energy may be so high as to damage the side panel seams below the waistband, thus yielding an insufficient bond in the seam below the waistband. Similarly, if the bonder energy is optimized for the side panel seams, such energy may not be high enough to melt all of the layers of the waistband, resulting in an insufficient waistband seam.

[0117] Sample 7 emphasizes the point just discussed. This sample was conducted on training pants run on a "pilot line" using a continuous commercial type rotary bonder process

that was set up to optimize the strength of the side panel material. However, when the one-inch waistband was added, the bonder energy was insufficient to properly melt the extra layers of material, resulting in an undesirably low (1.0 kg) strength in the waistband area.

[0118] The bonder parameters can be set so that the anvil essentially cuts through the lower melt point materials in the waistband with minimal energy loss and properly melts the underlying side panel materials to form a bond of desired strength. A desired bond strength is between about 2 kg to about 6 kg, and desirably about 5 kg. The settings for particular types of bonders in combination with particular combinations of materials can be determined so that a desired overall bond strength is achieved between the side panel facings while degrading the waistband facings.

[0119] It should be understood that resort may be had to various other embodiments, modifications, and equivalents to the embodiments of the invention described herein which, after reading the description of the invention herein, may suggest themselves to those skilled in the art without departing from the scope and spirit of the present invention.

What is claimed is:

1. A method for making an absorbent pant article having tearable side seams and an elastic waistband, comprising:

providing an article having a front panel, a back panel, a crotch panel, and an absorbent structure carried in the article, the front panel and back panel having longitudinal waist edge portions and lateral sides;

attaching an elastic waistband structure to the waist edge portions of the front panel and back panel;

defining a pant chassis by joining together the sides of the front panel and the back panel at side seams to form a waist opening defined by the opposed edge portions of the front and back panels and a pair of leg openings, wherein facing portions of the material of the front panel and back panel joined at the side seams are formed of a first material having a first melting point, and facing portions of the material of the waistband structure joined at the side seams are formed of a second material having a second lower melting point; and

wherein said step of joining the front and back panels includes thermally bonding the panels along the side seams so as to achieve a desired bond strength between the facing materials of the front and back panels having the first higher melting point while essentially thermally degrading the materials of the waistband facings having the second lower melting point.

2. The method as in claim 1, wherein the joining step is carried out by an ultrasonic bonding process.

3. The method as in claim 1, wherein the absorbent pant article is child's training pants.

4. The method as in claim 1, wherein the waistband structure is provided as an elongate sleeve member having an elastic member disposed therein.

5. The method as in claim 1, wherein the material of the front and back panels having the first higher melt point is a polypropylene spunbond material.

6. The method as in claim 5, wherein the polypropylene spunbond material is a facing layer of a stretch bond laminate material.

7. The method as in claim 1, wherein the material of the waistband structure having the lower melt point is a polyethylene film.

8. A disposable absorbent pant article, comprising:

a chassis having a front panel, a back panel, and a crotch panel extending between said front and back panels, opposed facings of said front and back panels being bonded together at side seams of said chassis so as to form a pant structure having a waist opening and a pair of leg openings;

a waistband structure attached to a waist edge portion of said front and back panels along a periphery of said waist opening with opposed facings of said waistband structure being bonded with said front and back panel facings at said side seams, said waistband facings being formed of a different material from said front and back panel facings; and

wherein said waistband facings generally do not increase bond strength at said side seams.

9. The article as in claim 8, wherein said waistband facings are formed of a material having a lower melting point compared to a melting point of said front and back panel facings.

10. The article as in claim 9, wherein a delta between the lower and higher melting points is at least greater than about 10 degrees Celcius.

11. The article as in claim 9, wherein a delta between the lower and higher melting points is at least greater than about 20 degrees Celcius.

12. The article as in claim 9, wherein a delta between the lower and higher melting points is at least greater than about 35 degrees Celcius.

13. The article as in claim 9, wherein said side seams comprise a thermally bonded seam such that the bond strength of said side seams is determined by the bond strength of said front and back panel, said waistband facings being thermally degraded to such an extent that they do not appreciably increase bond strength therealong.

14. The article as in claim 13, wherein said waistband facings comprise a polyethylene film.

15. The article as in claim 14, wherein said waistband structure comprises a sleeve of said polyethylene film having an elastic member disposed therethrough.

16. The article as in claim 13, wherein said front and back panel facings comprise a stretch-bond-laminate material having a polypropylene spunbond facing layer.

17. The article as in claim 8, wherein said article is a child's training pants.

18. The article as in claim 8, wherein said bond strength of said side seams is between about 2 kilograms and about 6 kilograms.

* * * * *

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US 20030022582A1

(19) **United States**

(12) **Patent Application Publication**
Cree et al.

(10) **Pub. No.: US 2003/0022582 A1**

(43) **Pub. Date: Jan. 30, 2003**

(54) **TEAR RESISTANT ELASTIC LAMINATE
AND METHOD OF FORMING**

(60) Provisional application No. 60/151,472, filed on Aug.
30, 1999.

(75) Inventors: **James W. Cree**, Mundeele, IL (US);
Jeffrey A. Middlesworth, Wauconda,
IL (US); **Stephen D. Bruce**, Crystal
Lake, IL (US)

Publication Classification

(51) **Int. Cl.⁷** **B32B 3/10; B32B 5/26**

(52) **U.S. Cl.** **442/394; 442/381; 442/398;
428/131**

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(21) Appl. No.: **10/234,081**

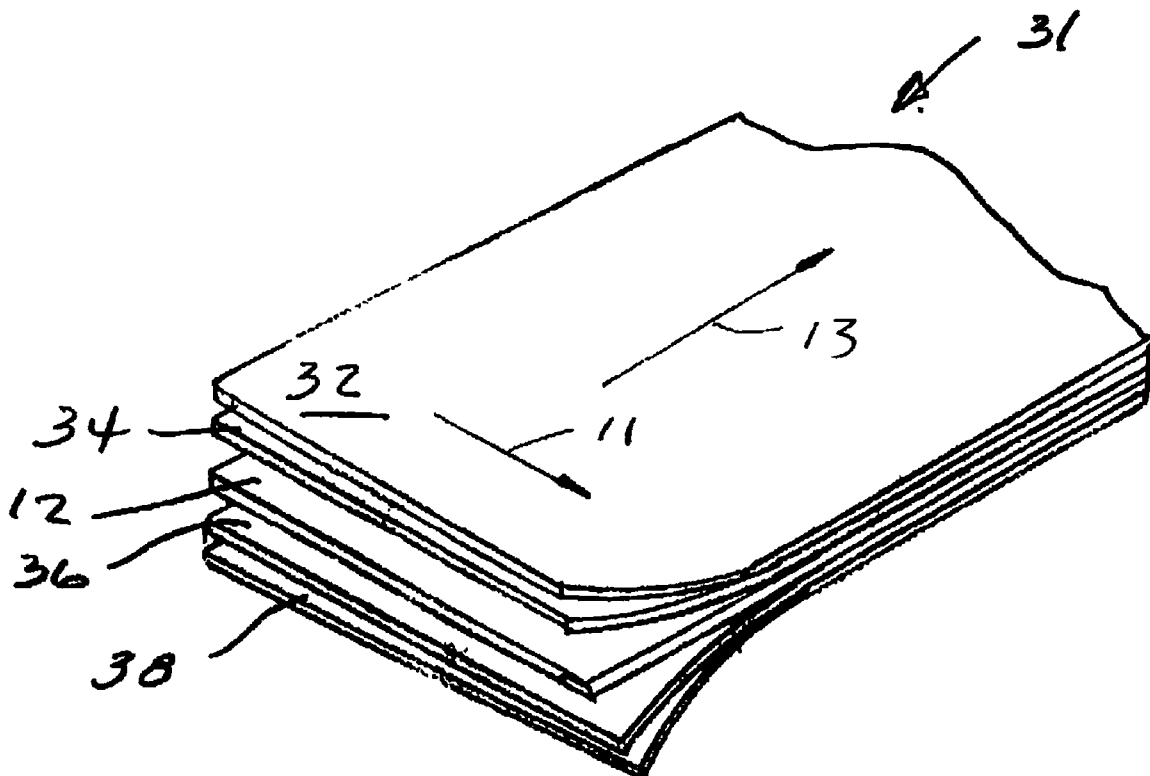
(22) Filed: **Aug. 30, 2002**

Related U.S. Application Data

(62) Division of application No. 09/491,721, filed on Jan.
27, 2000.

(57) **ABSTRACT**

An elastomeric film is bonded between two or more layers of nonwoven webs formed of nonelastomeric thermoplastic fibers. The laminate has, in a predefined transverse direction, an elastic elongation value greater than the predefined elastic elongation value of the nonwoven webs, and an ultimate force to break in the predefined transverse direction of at least 3000 g/in. The laminate advantageously provides a tear resistant, multiple ply, fabric that is soft to the touch as a result of the outwardly disposed nonwoven webs, and has a high elastic modulus. The laminate is particularly useful in applications where closure portions of a product must be stretched to keep the product in place when worn.



TEAR RESISTANT ELASTIC LAMINATE AND METHOD OF FORMING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit under Title 35 United States Code §119(e) of U.S. Provisional Application No. 60/151,472, filed Aug. 30, 1999.

BACKGROUND OF THE INVENTION

[0002] 1. Technical Field

[0003] This invention relates generally to elastic laminates, and more particularly to a laminate having an elastic polymer film core with at least one layer of an extensible nonwoven web bonded to each side of the elastic polymer film core.

[0004] 2. Background Art

[0005] There is a recognized need for a tear resistant elastic laminate that has a soft, comfortable outer surface. For example, in personal hygiene products such as diapers, there is a need for an elastic ear that can be stretched to provide a comfortable fit for the different anatomies of various wearers, improve the fit and comfort, reduce leakage, and be compatible with adhesive and mechanical fasteners. To provide the necessary stretching characteristics, the diaper ear must be formed of an elastic material that can stretch and recover without tearing prematurely. Moreover, there is a need to provide a lightweight cloth-like film based laminate that has an elastic recovery from stretching that is comparable to natural or synthetic rubber films in the transverse direction, and has a tear resistance that is comparable to durable cotton or fabrics composed of LYRCA® synthetic fibers or filaments.

[0006] Several arrangements have been proposed for tear-resistant elastic laminates. For example, U.S. Pat. No. 5,709, 921 issued Jan. 20, 1998 to Susan Elaine Shawver, discloses a multi-layer material formed of layers of elastomeric films, fibers, or webs. However, elastomeric materials, when disposed as the outer surface of a laminate, do not provide the softness and comfort characteristics of nonelastomeric outer webs. U.S. Pat. No. 5,226,992 issued Jul. 13, 1993 to Michael T. Morman, requires the use of force to pre-tension a necked non-woven prior to laminating to form a composite elastic neck-bonded laminate. This laminate is stretchable in a direction parallel to the direction of constriction or necking. It does not provide strong tear resistance due to the presence of the stressed necked material layer in the laminate. Another patent, also issued to Michael T. Morman, U.S. Pat. No. 4,981,474 on Jan. 1, 1991, discloses a composite material having a nonelastic material bonded to an elastic material while the elastic material is in a stretched condition so that when the elastic material is relaxed, the nonelastic material gathers between the locations where it is bonded to the elastic material. The resulting composite elastic material is only stretchable to the extent that the nonelastic material gathered between the bond locations allows the elastic material to elongate. Thus, in this arrangement, the elasticity of the laminate is limited by the inability of the nonelastic material to stretch beyond its initial dimensions. Moreover, the formed laminate is bulky and difficult to process. Another example of an elastic laminated sheet is

disclosed in U.S. Pat. No. 5,422,172 issued Jun. 6, 1995 to Pai-Chuan Wu, which discloses an elastic laminate formed by stretching, thus compromising the tear resistance of the laminate. U.S. Pat. No. 5,354,597 issued Oct. 11, 1994 to Karen M. Capik, et al, discloses an adhesive tape having a multi-layered construction in which at least one of the layers is formed of an elastomeric material and at least one other layer that is pre-stretched beyond its elastic limit. The tape does not provide the softness or comfort provided by an externally disposed nonwoven web.

[0007] The present invention is directed to overcoming the problems set forth above. There is a demonstrated need for a laminate that has the outer softness of a nonelastomeric nonwoven web, the elasticity of an elastomeric film, and the tear resistance of a conventional packaging film. There is also a demonstrated need for such a laminate that is easy to form and economical to produce.

SUMMARY OF THE INVENTION

[0008] In accordance with one aspect of the present invention, a tear resistant laminate comprises an elastic polymeric film that has a first nonwoven web formed of nonelastic fibers bonded to a top surface of the elastic polymeric film and a second nonwoven web formed of nonelastic fibers bonded to a bottom surface of the elastic polymeric film. Each of the nonwoven webs has a permanent deformation range from about 20% to about 200%, measured in a predefined transverse direction, and an ultimate force to break of greater than 1,500 g/in. in said predefined transverse direction. The laminate has an elastic elongation value greater than the elastic elongation values of the first and second nonwoven webs, and an ultimate force to break value of at least 3,000 g/in.

[0009] Other features of the tear resistant laminate embodying the present invention include the first and second nonwoven webs being formed of randomly disposed non-elastomeric thermoplastic fibers, with at least about 10% of the fibers having approximately equal softening temperatures. Other features include from about 2% to about 50% of the nonelastomeric thermoplastic fibers being disposed in a skewed direction at an angle greater than about 10 degrees from a predefined machine direction of the respective nonwoven web. Still other features include the nonelastomeric thermoplastic fibers comprising the first and second nonwoven webs having a mass divided by length value of at least about 1.5 denier. Yet additional features include the nonelastomeric thermoplastic fibers being formed of a polyolefin fiber. Desirably, the polyolefin nonwoven web has a basis weight of from about 14 g/m² to about 60 g/m².

[0010] Still additional features of the tear-resistant laminate embodying the present invention include the elastic polymeric film being a metallocene-catalyzed low-density polyethylene film. Yet other features include the metallocene-catalyzed low-density polyethylene film having a basis weight of from about 18 g/m² to about 100 g/m². Another feature includes the elastic polymeric film having stretch to break properties greater than the stretch to break values of the nonwoven webs. Additional features include the elastic polymeric film being formed of a copolymer blend, for example a block-copolymer blend, a thermoplastic urethane, or a cross-linked rubber film having a basis weight of from about 30 g/m² to about 100 g/m². Important additional features include the elastic polymeric film being a perforated film.

[0011] Yet additional features of the tear-resistant laminate embodying the present invention include the bond between the respective first and second nonwoven webs and the top and bottom surfaces of the polymeric film being a mutually bonded surface area between the respective web surfaces and the film surfaces of at least 3.0% of the respective total surface areas. Still additional features include the first and second nonwoven webs each being separate, multi-layered composite structures formed of two or more layers of nonwoven fabric bonded together.

[0012] In accordance with another aspect of the present invention, a method for forming a tear-resistant laminate includes selecting an elastic polymeric film having a basis weight of from about 18 g/m² to about 100 g/m², selecting a first nonwoven web formed of randomly disposed non-elastomeric thermoplastic fibers, heating the first nonwoven web at a temperature between the softening temperature and the melting temperature of at least 10% of the thermoplastic fibers, drawing the heated first nonwoven web under tension in a substantially longitudinal direction, and cooling the first nonwoven web whereby the first nonwoven web is consolidated laterally and is extensible in a direction transverse to the longitudinal direction. Further steps include selecting a second nonwoven web formed of randomly disposed non-elastomeric thermoplastic fibers, heating the second nonwoven web to a temperature between the softening temperature and the melting temperatures of at least about 10% of the thermoplastic fibers, drawing the heated second nonwoven web under tension in a substantially longitudinal direction to cause the web to be longitudinally elongated, and cooling the second nonwoven web whereby the second nonwoven web is consolidated laterally and is extensible in a direction transverse to the longitudinal direction. The bottom surface of the first nonwoven web is then bonded to the top surface of the elastomeric film and the top surface of the second nonwoven web is bonded to the bottom surface of the elastomeric film by thermal fusion with the addition of an applied pressure to produce mutually bonded surface areas between the respective nonwoven web surfaces and the elastomeric film surfaces of at least 3% of the respective total mutually opposed surface areas.

[0013] Other features include the step of bonding the respective nonwoven webs with the elastomeric film being carried out by ultrasonic welding.

[0014] Other features of the method of forming a tear-resistant laminate, in accordance with the present invention, include forming the first and second nonwoven webs of two or more separately preformed layers of nonwoven material.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] A more complete understanding of the structure and operation of the present invention may be had by reference to the following detailed description when taken in conjunction with the accompanying drawings, wherein:

[0016] FIG. 1 is a three-dimensional view of a three-layer tear resistant laminate embodying the present invention;

[0017] FIG. 2 is a plan view of a preferred weld bond pattern whereby the multiple layers of the tear resistant laminate embodying the present invention are bonded together;

[0018] FIG. 3 is a three-dimensional view of a five-layer tear resistant laminate embodying the present invention; and

[0019] FIG. 4 is a flow diagram of a method for forming the tear resistant laminate in accordance with the present invention.

DETAILED DESCRIPTION OF PRESENTLY PREFERRED EXEMPLARY EMBODIMENTS

[0020] The term "nonwoven web" as used herein means a fabric formed of randomly laid fibers or filaments to form a web wherein some of the fibers are bonded by fiber-to-fiber fusion, by fiber entanglement, or by thermal bonds such as point bonding.

[0021] The term "machine direction", as used herein, means the direction in which precursor webs are formed, which is the longitudinal direction of an uncut web.

[0022] The term "transverse direction", as used herein means the cross direction, disposed at 90° to the machine direction, and extends across the width of the initially formed precursor web.

[0023] A first preferred embodiment of a tear resistant laminate embodying the present invention is generally indicated by the reference numeral 10 in FIG. 1. The laminate 10 is suitable for use in sanitary products that require a closure system provided by the laminate 10 that is soft to the touch and can stretch in a transverse direction indicated by the arrow 11. The three-layer laminate 10 illustrated in FIG. 1 has a center ply that is formed of an elastic polymeric film 12 having a top surface 14 and a bottom surface 16. A top layer comprises a first nonwoven web 18 having a bottom surface 20 that is bonded to the top surface 14 of the elastomeric film 12. The bottom ply of the laminate 10 comprises a second nonwoven web 22 having a top surface 24 that is bonded to the bottom surface 16 of the elastomeric film 12.

[0024] The elastic polymeric film 12 may be formed of either a metallocene based low density polyethylene (m-LDPE), or a block-copolymer blend that contains styrene/butadiene/styrene (SBS), styrene/ethylene-butylene/styrene (SEBS), ethylene vinyl acetate (EVA), thermoplastic urethane, or cross-linked rubber. Desirably, the elastic polymeric film 12 has a basis weight of from about 18 g/m² to about 100 g/m². Preferably, an m-LDPE film has a basis weight of about 25 g/m², whereas block copolymer films have a basis weight of about 50 g/m². Also, it is desirable that the elastic polymeric films have less than 25% set when stretched 50%.

[0025] In addition to having good elasticity, it is also desirable that the elastic polymeric film 12 be puncture resistant. For example, if the laminate 10 embodying the present invention is used to form pull tabs, or ears, for diaper products, it is important that the laminate not be easily punctured by long fingernails. Since nonwoven materials generally provide little or no puncture resistance, the elastic polymeric film 12 should have a puncture resistance, as represented by a Dart Impact value, of at least 400 g.

[0026] In an exemplary embodiment, a low density polyethylene film (m-LDPE) having a basis weight of 25 g/m² was used as the middle layer 12 in a multiple layer laminate. The m-LDPE film was tested and found to have the elastic properties listed below in Table I.

TABLE I

MEASURED PROPERTIES OF ELASTOMERIC FILM		
Thickness	1 mil (25 μm)	
Tensile force in transverse direction (per unit of sample width):		
at 25% elongation	181 N/m	(468 g/in)
at 50% elongation	205 N/m	(532 g/in)
at break	611 N/m	(1583 g/in)
Elongation at break	588.5%	
Dart impact	750 g	

[0027] The first and second nonwoven webs 18, 22 are formed of nonelastomeric thermoplastic fibers that have good, uniform but random, filament/fiber distribution. The fiber orientation should be such as to provide a degree of fiber randomization wherein at least some of the random fibers are disposed at an angle with respect to a machine direction of the web 13 that is equal to or greater than 10°. In the preferred embodiments of the present invention, the nonwoven webs 18, 22 are formed of spunbond nonwoven fibers which have a mass divided by length value of at least about 1.5 denier, and preferably from about 2.0 to about 3.5 denier per filament. The polymer composition of the fibers is desirably a polyolefin, and preferably polypropylene or polyethylene/polypropylene blends or other bicomponent blends having polypropylene as one component of the blend.

[0028] In an illustrative exemplary embodiment of the present invention, a spunbond thermoplastic polypropylene nonwoven fabric is used as a precursor web in forming the nonwoven webs 18, 22 of the laminate 10 embodying the present invention, produced by Avgol Nonwoven Industries, Ltd. of Holon, Israel and has the properties listed below in Table II.

TABLE II

MEASURED PROPERTIES OF PRECURSOR NONWOVEN WEB		
Basis Weight	25 g/m ²	
Tensile force in transverse direction (per unit of width):		
at 25% elongation	539 N/m	(1396 g/in)
at 50% elongation	785 N/m	(2033 g/in)
at break	843 N/m	(2183 g/in)
Elongation at break	72.5%	
fiber thickness (mass divided by length)	2.0 denier	

[0029] The initial nonwoven fabric, described above in Table II, was then consolidated laterally in accordance with the post-treatment processing of nonwoven webs described in U.S. Pat. Re. 35,206 reissued Apr. 16, 1996 to Charles B. Hassenboehler, Jr., et al. and titled POST-TREATMENT OF NONWOVEN WEBS. More specifically, in the illustrative embodiment, an initial precursor nonwoven web having a width of 1.37 m (54 in.) was laterally consolidated to a width of 0.84 m (33 in.), resulting in a neck-down ratio (ratio of original width to consolidated width) of about 1.6:1. In forming the first and second nonwoven webs 18, 20 embodying the present invention, it is generally desirable to consolidate the precursor webs by a factor of from at least

about 1.3:1 to about 4:1 (original width to consolidated width). As described above, it is desirable that the thermoplastic fibers comprising each of the nonwoven webs are randomly disposed within the web, preferably skewed at an angle greater than about 10° from the machine direction 13. Preferably, at least about 2% and up to about 50% of the thermoplastic fibers are disposed in the skewed direction. Also, it is desirable that the basis weight of the precursor webs be in a range of from about 14 g/m² to about 60 g/m² (0.003 lb. per ft.² to 0.012 lb./ft.²).

[0030] Importantly, the first and second nonwoven webs 18, 22 have essential properties measured in the transverse direction 11, after consolidation. The consolidation should be sufficient to provide a nonelastic elongation range in the transverse direction of from about 20% to about 200%, and have an ultimate force to break of greater than 580 N/m (1500 g/in.). The nonwoven webs 18, 22 representing the illustrative example of a preferred embodiment of the present invention were consolidated as described above to a neck-down ratio of about 1.6:1. The consolidated nonwoven web was then tested and found to have the elongation properties listed below in Table III.

TABLE III

PROPERTIES OF CONSOLIDATED NONWOVEN WEB		
Tensile force in transverse direction (per unit of sample width):		
at 25% elongation	29 N/m	(74 g/in)
at 50% elongation	266 N/m	(690 g/in)
at break	666 N/m	(1725 g/in)
Elongation at break	109.8%	

[0031] After forming, the first and second nonwoven webs 18, 22 were bonded to the elastomeric film 12. More specifically, as shown in FIG. 1, the bottom surface 20 of the first nonwoven web 18 is bonded to the top surface 14 of the film 12, and the top surface 24 of the second nonwoven web 22 is bonded to the bottom surface 16 of the elastomeric film 12. Preferably, the bonding between the respective webs 18, 22 and elastomeric film 12 is carried out simultaneously by the use of ultrasonic or fusion bonding. For this purpose, it is desirable that at least about 10% of the randomly disposed fibers in the first and second webs 18, 22 have approximately equal softening temperatures. The nonwoven webs 18, 22 are thus welded, preferably by a combination of thermal and mechanical energy, to provide a peel force greater than 155 N/m (400 g/in.) of width. To provide the adequate peel force, it has been found that a weld area of at least 3.0% of the total contiguous surface area at each of the layer interfaces should participate in the bonding. A pattern of 1/8 mm diameter weld areas, arranged in a geometric pattern as illustrated in FIG. 2, is sufficient to provide the required mutual bonding area. With continued reference to FIG. 2, the spacing 28 of the 1/8 mm diameter common bond areas 26 in the transverse direction 11, in the illustrative example, is 4 mm. The spacing 30 between the 1/8 mm diameter common bond areas 26 in the machine direction 13, of the illustrative example, is 7 mm. As illustrated in FIG. 2, the 1/8 mm common bond areas 26 are arranged to form a series of open trapezoidal figures using a "zig-zag" pattern. The spaced apart point bonds provided by the arrangement illustrated in FIG. 2 assures that all layers, 12, 18, 22 of the laminate 10 are

adequately connected and that any force exerted on any one of the layers 12, 18, 22, or on the laminate 10 as a whole, is distributed through all of the layers 18, 12, 22. This arrangement is markedly different than adhesive bonding or extrusion lamination which join only two adjacently disposed layers.

[0032] A second exemplary embodiment of the present invention is illustrated in FIG. 3. In this embodiment, a five-layer laminate 31 comprises two external layers of nonwoven web on each side of the centrally disposed elastomeric film 12. More specifically, a first nonwoven web 32 and a second nonwoven web 34 are bonded to each other and to the elastomeric film 12 on the upper side of the film 12, and a third nonwoven web 36 and a fourth nonwoven web 38 are bonded to each other and to the bottom surface of the elastomeric film 12. The two double plies of nonwoven web, 32, 34, and 36, 38 strengthen the laminate 31 while maintaining a soft external surface of the laminate 31. In this embodiment, as well as in the earlier described embodiment of the three-layer laminate 10, it is necessary that at least a portion of the fibers comprising each of the nonwoven webs have a similar softening temperature. In forming the five-layer laminate 31, all of the plies, i.e., the first nonwoven web 32, the second nonwoven web 34, the elastomeric film 12, the third nonwoven web 36 and the fourth nonwoven web 38, may be bonded simultaneously by ultrasonic welding or other point fusion welding methods. Alternatively, if so desired, the first and second nonwoven webs 32, 34 may be prebonded to each other to form a single structure, and the third and fourth nonwoven webs 36, 38 may be prebonded to each other to form a second structure, prior to bonding the thus formed double nonwoven web structures to the elastomeric film 12. Also, if so desired, the elastomeric film 12 may comprise two or more layers of film having similar, or even different, elasticity properties to provide greater tear resistance and minimize the possibility of catastrophic failure. In this arrangement, the nonwoven webs are respectively bonded to the top and bottom surfaces of the assembled multi-layered elastomeric film 12.

[0033] In accordance with another aspect of the present invention, a method for forming a tear resistant laminate is carried out in accordance with the steps outlined in FIG. 4. The steps include selecting an elastomeric polymeric film 12 having a basis weight of from about 18 g/m² to about 100 g/m², as represented by block 40. As noted above, the elastomeric film 12 may comprise multiple layers, if so desired. In the preferred embodiment, the elastic polymeric film 12 is a metallocene based low density polyethylene having a basis weight of from about 18 g/m² to about 25 g/m². If it is desired to form a breathable web, the elastomeric film 12 may be perforated, such as by hot needle perforation or vacuum perforation, as indicated by block 42.

[0034] First and second precursor nonwoven webs having the properties described above are then selected as represented by blocks 44 and 46. The first and second precursor webs are then heated to a temperature between the softening temperature and the melting temperature of the thermoplastic fibers comprising the webs, as indicated at blocks 48 and 50. The heated webs are then drawn in the machine direction, under tension, to cause the web to be elongated in the machine direction and consolidated laterally in the transverse direction as represented by blocks 52 and 54 in FIG. 4. The first and second webs are then cooled whereby the

nonwoven webs 18, 22 are consolidated laterally and have an original precursor width to consolidated width ratio of from about 1.3:1 to about 4:1. The cooling steps for the first and second webs are indicated by blocks 56, 58. The consolidation process for the first and second webs, represented by blocks 44-58 of FIG. 4, are carried out in accordance with the consolidation process described in the above-referenced U.S. Pat. Re. 35,206, with the exception of heat setting the drawn webs.

[0035] If, in the above-described alternative exemplary embodiment, the five-layer laminate 31 is formed, the third and fourth nonwoven webs are selected, heated, drawn, and cooled as described above with reference to the first and second nonwoven webs, and as represented by blocks 60-72 of FIG. 4. If desired, the first and third nonwoven webs 18, 36, and the second and fourth webs, 22, 38, may be bonded to each other as represented at blocks 74 and 76 prior to final assembly of the laminate 31. Alternatively, the first, second, third and fourth nonwoven webs 18, 22, 36, 38 may all be simultaneously bonded to the elastomeric film 12.

[0036] The consolidated webs, 18-22, and if so desired in the alternate embodiment, the additional nonwoven webs, are bonded, as described above, to form a single laminate structure 10, 31, having an elastic elongation range of up to 200% and an ultimate force to break of greater than 772 N/m (2000 g/in.). The multiple layers of the laminate are joined together by fusion bonds that have a collective area of at least 3.0% of the total contiguous surface area of adjacently disposed layers and a peel strength per unit width of greater than 154 N/m (400 g/in.). If the elastomeric film 12 is a multi-layered film, all layers of the elastomeric film structure may be simultaneously bonded together during bonding of the laminate structure.

[0037] More specifically, the measured elongation characteristics of the exemplary embodiment described above having the elastomeric film 12 and two nonwoven webs 18, 22, one bonded on each side of the elastomeric film 12, are listed in Table IV. A two-inch wide sample of the laminate 10, was assembled in accordance with the above described method and tested using a 3-inch jaw gap and a 20-inch/minute crosshead speed.

TABLE IV

MEASURED PROPERTIES OF THREE-LAYER LAMINATE		
Tensile force in transverse direction (per unit of width):		
at 25% elongation	240 N/m	(621 g/in.)
at 50% elongation	513 N/m	(1328 g/in.)
at break	1575 N/m	(4080 g/in.)
Elongation at break	135.6%	

[0038] In addition to the measured elongation properties listed above in Table IV, an additional sample was slit 1/2 inch deep across the sample width and then stretched in an attempt to induce a tear. The sample failed before a tear across the width of the sample was initiated. This test clearly demonstrated the excellent tear resistance of the laminate 10, 31 embodying the present invention.

Industrial Applicability

[0039] The laminate 10, 31 provided by the present invention provides a lightweight, cloth-like, film-based laminate

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIRECCIÓN DE NUEVAS CREACIONES

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 Evento 378
 Actuación 519
 Oficio 07 102 198
 Folios 016

Patente de Invención ☒
Vía PCT (fase nacional) ☒ Cap. I ☒

No. Solicitud Internacional PCT/SE2005/000319

Fecha de Presentación Internacional 2/marzo/2005

Como resultado del Examen de Fondo realizado, con fundamento en el Artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se comunica:

1. Documentos estudiados

Descripción: Folios 36 a 58 como se radicó inicialmente.
Reivindicaciones: Folios 59 a 62 como se radicó inicialmente
Dibujos: Folios 64 a 68 como se radicó inicialmente
Oposiciones: No se presentaron
Respuesta del solicitante:
Prioridad: No reivindica.

2. Objeto de la invención

Título de la solicitud: "Calzoncillos de higiene para uso único"

El problema planteado en esta solicitud es proveer un artículo absorbente en forma de calzoncillo con mejorada resistencia en el uso, a fuerzas de tensión en áreas críticas como los extremos de unión de la cintura y las aberturas de las piernas.

Para resolver este problema técnico la solicitud en estudio proporciona un calzoncillo de higiene desechable con costuras laterales soldadas, comprendidas entre la abertura de la cintura y la abertura para cada pierna, y reforzadas con al menos una tira no tejida que contiene fibras termoplásticas aplicada a los bordes longitudinales del panel frontal y posterior del artículo.

El objeto de la presente Solicitud se relaciona con la Clasificación Internacional de Patentes (CIP): A61F 013/015

3. Determinación del Estado de la Técnica

El Estado de la Técnica se determinó con base en la:

Fecha de Presentación Internacional: marzo 2 de 2005

Y se encontraron los siguientes documentos que anticipan el objeto de esta solicitud:

Ítem	Documento	Título	Fecha de Publicación
D1	US20040102757	Disposable absorbent article with an elastic waistband and easy tear side seams	27/mayo/2004
D2	US20030022582	Tear resistant elastic laminate and method of forming	30/junio/2003

D1 divulga (página 1, párrafo [0001]) artículos absorbentes desechables, como los pantalones de entrenamiento para los niños, y más particularmente un proceso para la fabricación de tales artículos que tienen una cintura elástica.

D2 divulga (página 1, párrafo [0003]) un laminado que tiene una base de película de polímero elástico con al menos una capa de una tela no tejida extensible unida a cada lado de la base de película de polímero elástico.

4. Examen de Patentabilidad (Art 14 D486)

Novedad (Art 16 D486)

La reivindicación 1 se refiere a calzoncillos de higiene desechables, tales como calzoncillos de pañal, con una dirección longitudinal y una dirección transversal, como se ve en la dirección longitudinal, una porción frontal, una porción posterior y una porción de entrepierna intermedia provistas con dos aberturas para pierna, las porciones de borde longitudinal externo de la porción frontal, como se ve en la dirección transversal, estando conectado por costuras de soldadura longitudinales a las porciones de borde longitudinal externo de la porción posterior, como se ve en la dirección transversal, a fin de formar una abertura para cintura, que está delimitada por las porciones de borde transversal externas de la porción frontal y de la porción posterior, y las dos aberturas para pierna en la porción de entrepierna, cuyas aberturas para pierna están delimitadas hacia fuera en la dirección transversal por las porciones de extremo interno de las costuras de soldadura como se ve en la dirección longitudinal de los calzoncillos de higiene, y los calzoncillos de higiene teniendo una cubierta elástica externa, y que comprende una unidad de absorción que se extiende en la dirección longitudinal a través de cuando menos parte de la porción de entrepierna, y la cubierta estando hecha de un laminado elástico que comprende una película elástica aplicada entre dos capas no tejidas, **caracterizados** en que las costuras de soldadura están cada una reforzadas por cuando menos una tira no tejida que contiene fibras termoplásticas, cuya tira no tejida se ha aplicado a las porciones de borde longitudinal de la porción frontal y porción posterior de los calzoncillos de higiene cuando menos a lo largo de las porciones de extremo interno, como se ve en la dirección longitudinal de los calzoncillos de higiene, de las dos porciones de borde y se han soldado juntas con las porciones de borde longitudinal de la cubierta a fin de formar las costuras de soldadura, y en que la resistencia a la tensión de las costuras de soldadura, en una dirección transversal a la costura de soldadura y en la dirección transversal, excede 5 N/25.4 mm cuando menos en las porciones reforzadas con la tira

no tejida, y en que la resistencia a la rotura de la cubierta en la dirección transversal excede la resistencia a la tensión para las costuras de soldadura reforzadas.

Comparación de las características técnicas **esenciales**, con las del estado de la técnica:

Características esenciales	D1
PRODUCTO: Calzoncillos de higiene desechables caracterizados en que:	Pañal absorbente desechable
- las costuras de soldadura están cada una reforzadas por cuando menos una tira no tejida que contiene fibras termoplásticas; la tira se ha aplicado a las porciones de borde longitudinal de la porción frontal y porción posterior y se han soldado juntas	X
la resistencia a la tensión, en una dirección transversal excede 5 N/25.4 mm,	la resistencia de la unión de las costuras laterales está entre cerca de 2 kilogramos y 6 kilogramos aproximadamente en 1 pulgada (25.4 mm)
la resistencia a la rotura de la cubierta en la dirección transversal excede la resistencia a la tensión para dichas costuras	X

Aunque algunas de las características técnicas **esenciales** de la reivindicación 1 se ven anticipadas en el documento del estado de la técnica (D1), donde se da a conocer un pañal absorbente desechable que incluye un chasis que tiene un panel frontal, un panel trasero, y un panel de entrepierna que se extiende entre los paneles frontal y posterior; una abertura de la cintura y un par de aberturas para las piernas que se forman por la unión selectiva del panel frontal y panel trasero en las **costuras laterales** (D1: párrafo [0022]), los paneles frontal y posterior puede incluir la unión de los paneles a lo largo de las costuras laterales a una temperatura y / o presión seleccionada con el fin de lograr una fuerza de unión deseada entre los materiales de revestimiento de los paneles frontal y posterior (D1: párrafo [0011], reivindicación 1); la resistencia de las costuras se puso a prueba en la sección de cintura de las juntas para determinar la resistencia a la ruptura del vínculo cintura - costura lateral cuando se aplica una carga a una velocidad constante en una dirección perpendicular a la dirección de la costura, la "fuerza " siendo la carga máxima en kilogramos lograda antes que la costura se rompiera (D1: párrafo [0114]), se debe apreciar que la resistencia de la costura se midió sólo en la estructura de la cintura de una pulgada de ancho, y no a lo largo de la costura lateral entera (D1: párrafo [0116]), donde la resistencia de la unión de dichas costuras laterales está entre cerca de 2 kilogramos y 6 kilogramos aproximadamente(D1: Reivindicación 18) ; ningún documento por el mismo da a conocer todas las características técnicas **esenciales** de la reivindicación 1, por lo tanto dicha reivindicación se considera nueva.

Nivel Inventivo (Art18 D486)

La reivindicación 1 se refiere a calzoncillos de higiene desechables, tales como calzoncillos de pañal, con una dirección longitudinal y una dirección transversal, como se ve en la dirección longitudinal, una porción frontal, una porción posterior y una porción de entrepierna intermedia provistas con dos aberturas para pierna, las porciones de borde longitudinal externo de la porción frontal, como se ve en la dirección transversal, estando conectado por costuras de soldadura longitudinales a las porciones de borde longitudinal externo de la porción posterior, como se ve en la dirección transversal, a fin de formar una abertura para cintura, que está delimitada por las porciones de borde transversal externas de la porción frontal y de la porción posterior, y las dos aberturas para pierna en la porción de entrepierna, cuyas aberturas para pierna están delimitadas hacia fuera en la dirección transversal por las porciones de extremo interno de las costuras de

soldadura como se ve en la dirección longitudinal de los calzoncillos de higiene, y los calzoncillos de higiene teniendo una cubierta elástica externa, y que comprende una unidad de absorción que se extiende en la dirección longitudinal a través de cuando menos parte de la porción de entrepierna, y la cubierta estando hecha de un laminado elástico que comprende una película elástica aplicada entre dos capas no tejidas, **caracterizados** en que las costuras de soldadura están cada una reforzadas por cuando menos una tira no tejida que contiene fibras termoplásticas, cuya tira no tejida se ha aplicado a las porciones de borde longitudinal de la porción frontal y porción posterior de los calzoncillos de higiene cuando menos a lo largo de las porciones de extremo interno, como se ve en la dirección longitudinal de los calzoncillos de higiene, de las dos porciones de borde y se han soldado juntas con las porciones de borde longitudinal de la cubierta a fin de formar las costuras de soldadura, y en que la resistencia a la tensión de las costuras de soldadura, en una dirección transversal a la costura de soldadura y en la dirección transversal, excede 5 N/25.4 mm cuando menos en las porciones reforzadas con la tira no tejida, y en que la resistencia a la rotura de la cubierta en la dirección transversal excede la resistencia a la tensión para las costuras de soldadura reforzadas.

Comparación de las características técnicas **esenciales**, con las del Estado de la Técnica:

Características esenciales	D1	D2
PRODUCTO: Calzoncillos de higiene desechables caracterizados en que:	Pañal absorbente desechable	Artículo laminado resistente a la rotura que consiste en:
- las costuras de soldadura están cada una reforzadas por cuando menos una tira no tejida que contiene fibras termoplásticas; la tira se ha aplicado a las porciones de borde longitudinal de la porción frontal y porción posterior y se han soldado juntas	X	una película elástica polimérica que tiene una primera tela no tejida formada por fibras no elásticas unida a una superficie y una segunda tela no tejida formada por fibras no elásticas unida a la otra superficie de la película de polímero elástico; cada tela no tejida unida a la película mediante soldadura ultrasónica. Las fibras que componen cada tela no tejida son hechas de materiales termoplásticos.
la resistencia a la tensión, en una dirección transversal excede 5 N/25.4 mm,	la resistencia de la unión de las costuras laterales está entre cerca de 2 kilogramos y 6 kilogramos aproximadamente en 1 pulgada (25.4 mm)	la resistencia a la tensión en dirección transversal hasta rotura es de 666 N/m (17 N/25.4 mm)
la resistencia a la rotura de la cubierta en la dirección transversal excede la resistencia a la tensión para dichas costuras	X	la resistencia a la tensión en dirección transversal hasta rotura fue de 1575 N/m (40 N/25.4 mm)

El estado de la técnica más cercano es D1, que divulga artículos absorbentes desechables, como los pantalones de entrenamiento para los niños, y más particularmente un proceso para la fabricación de tales artículos que tienen una cintura elástica.

La diferencia de la reivindicación 1 con respecto a D1, es que el artículo absorbente cuenta con costuras reforzadas por cuando menos con una tira no tejida que contiene fibras termoplásticas soldada junto a las porciones de borde longitudinal de la porción frontal y porción posterior con una resistencia a la rotura de la cubierta en la

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dirección transversal que excede la resistencia a la tensión para dichas costuras (de mínimo 5 N/25.4 mm).

El efecto técnico que logra las costuras reforzadas por cuando menos con una tira no tejida que contiene fibras termoplásticas soldada junto a las porciones de borde longitudinal de la porción frontal y porción posterior con una resistencia a la rotura de la cubierta en la dirección transversal que excede la resistencia a la tensión para dichas costuras (de mínimo 5 N/25.4 mm) es mejorar la resistencia a la rotura en áreas críticas del artículo.

Por lo tanto, el problema técnico objetivo que pretende resolver esta invención se puede formular de la siguiente forma: “cómo modificar el producto conocido en D1 para mejorar la resistencia a la rotura en áreas críticas del artículo”

Sin embargo, la tira de material no tejido formada por fibras no elásticas (termoplásticas) para mejorar la resistencia a la rotura en áreas críticas de artículos sanitarios, ya está divulgada en el documento D2 que se refiere a una película elástica polimérica que tiene una primera tela no tejida formada por fibras no elásticas unida a una superficie y una segunda tela no tejida formada por fibras no elásticas unida a la otra superficie de la película de polímero elástico (párrafo [0008]); cada tela no tejida unida a la película mediante soldadura ultrasónica (párrafo [0013]); las fibras que componen cada tela no tejida son hechas de materiales termoplásticos (párrafo [0029]) y tienen una resistencia a la tensión, en dirección transversal de 666 N/m (17 N/25.4 mm) (tabla III), y donde la resistencia a la rotura del material conformado en la dirección transversal es de 1575 N/m (40 N/25.4 mm) (tabla IV).

En consecuencia, el experto en la materia, incluiría la película elástica polimérica reforzada por sus superficies con dos telas no tejidas formadas por fibras no elásticas (termoplásticas) de D2 en el producto de D1 para llegar así al objeto de la reivindicación 1 de la solicitud. Por lo cual se considera obvia.

Conclusión:

La reivindicación 1 cumple el requisito de novedad (Art. 16 D 486) pero no el requisito de nivel inventivo (Art. 18 D486).

Aplicación industrial (Art 19 D 486)

Todas las reivindicaciones (1-10) cumplen con el requisito de Aplicación Industrial, ya que la materia reivindicada es susceptible de ser realizada o usada en la industria.

5. Conclusión

Los requisitos de Patentabilidad de la presente solicitud están afectados así:

Item	Documento	Reivindicaciones afectadas	Requisito que afecta
D1	US20040102757	1 - 10	Nivel Inventivo
D2	US20030022582	1 - 10	Nivel Inventivo

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de 60 días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar

respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única N° 10 de 2001.



JOSÉ LUIS SALAZAR LÓPEZ
Director de Nuevas Creaciones (C)

El anterior requerimiento fue notificado por fijación en lista, de fecha
23 ABR. 2001

CONCEPTO TÉCNICO No. 1247	EXAMINADOR TÉCNICO Código No. 2020101
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